

NOMENCLATRURAL AND TAXONOMIC NOTES
ON THE PTERIDOPHYTES OF COSTA RICA,
PANAMA, AND COLOMBIA, II

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Abstract.—The purpose of this paper and the one which preceded it (Proc. Biol. Soc. Washington 89:703-732. 1977) is to publish lectotypes, new combinations, and new species of pteridophytes that will be included in my forthcoming "Ferns and Fern-allies of Costa Rica, Panama, and the Chocó."

Throughout this paper in the citation of type specimens, the word "photo" followed by a number refers to the numbered series of photographs taken by C. V. Morton and distributed from the U.S. National Museum. Photographs by others are identified by the name (and number, if any) of the person or institution who took them.

The principal entries are in alphabetical order for easy reference. In those cases where the principal entries are taxonomic or nomenclatural synonyms, the disposition of these names is given as I understand it at present.

Acrostichum aureum L. Sp. Pl. 2:1069. 1753

Lectotype.—To fix the application of this name, I choose: plate 7 of Plumier's "Description des Plantes de l'Amérique," which is based on a specimen collected by Plumier at Ft. Royal, Martinique. The specimen bearing "Acrostich. 10 aureum" in the hand of Linnaeus (LINN 1245.5 not seen microfiche Smithsonian Institution Library), according to Jackson (Ind. Linn. Herb. 28. 1912), was not present in Linnaeus' herbarium until after 1755, and so cannot be a type.

Alsophila ichthyolepis Christ, Bull. Herb. Boiss. II, 6:186. 1906

Lectotype.—To fix the application of this name, I choose: La Palma, Pcia. S. José, Costa Rica, 1459 m, *Tonduz 12527* (P not seen photo 3458; isolectotypes NY not seen, US). The other syntypes are: Costa Rica, *Wercklé 57* (P not seen); Navarro, Pcia. Cartago, Costa Rica, *Wercklé* (P not seen); and Tsaki, Talamanca, Pcia. Limón, Costa Rica, 200 m, *Pittier 9469* (P not seen). *Alsophila ichthyolepis* is a synonym of *Trichopteris stipularis* (Christ) Tryon.

Anemia hirsuta var. *humboldtiana* Hieron.
Bot. Jahrb. Engler 34:566. 1905

Lectotype.—To fix the application of this name, I choose: Between Caripe and Santa Cruz, Edo. Monagas—Sucre, Venezuela, *Humboldt 459* (B-Hb. Willd. 19495-2 not seen Tryon photo US). The other syntypes are: Panamanian Isthmus, Colombia, *Lehmann 1866* (B not seen); near Chaparral, Depto. Tolima, Colombia, 700 m, *Lindig 213* (B not seen); Edo. Cumaná, Venezuela, *Moritz 158* (B not seen); Venezuela, *van Lansberge* [probably *Landsberg*] (B not seen); and Peru,

Mathews 3299 (B not seen; isotype US). *Anemia hirsuta* var. *humboldtiana* is a synonym of *A. hirsuta* (L.) Swartz.

Anemia pastinacaria Moritz in Prantl

Untersuch. Morph. Gefaesskrypt. 2:110. 1881

Lectotype.—To fix the application of this name, I choose: “In convalli del Tigre,” Venezuela, *Moritz 26* (B). The other syntypes are: Venezuela, *Landsberg* (B not seen); Caracas, Distr. Fed., Venezuela, *Galeotti 196* (B not seen); Chaparral, Depto. Tolima, Colombia, 700 m, *Lindig 213* [not *Karsten*, as Prantl has it; see Bot. Jahrb. Engler 34:566. 1905] (W not seen); Panama, *Duchassaing* (GOET not seen); Trapiche de la Concepción, Edo. Oaxaca, Mexico, *Liebmann* (C not seen); and Trinidad, *Fendler 62* (M not seen).

Asplenium cuspidatum var. *triculum* Lellinger, sp. nov.

Fig. 1

Plantae epipetricae vel epiphyticae, per radices repentes et gemmiferas multiplicatas. Rhizoma erectum parvum ad apicem paleaceum; paleis ovato-lanceolatis, ca. 2 mm longis 1 mm latis griseo-brunneis clathratis subbullatis persistentibus. Stipites 1–6 cm longi, 0.25–0.5 mm lati tereti exalati viridi vel adaxialiter brunnei, ad basin squamati, paleis eis rhizomatis similibus, supra basin paleis linearibus praediti. Rachides virides vel adaxialiter ad basin brunnei teretes vel ad apicem alatae sparse squamatae, paleis linearibus contortis fuscis. Laminae 2–20 cm longae 0.8–4.5 cm latae papyraceae lanceolatae vel anguste lanceolatae, ad basin obtusae, ad apicem acuminatae vel caudatae, (1)2-pinnato-pinnatifidae interdum tripinnatae; pinnis petiolatis alternis inaequilateralibus, ad basin inferiorem excavatis (parvissimis exceptis); pinnulis acutis vel acuminatis, basalibus acroscopicis saepe petiolulatis, acroscopicis dilatatis; segmentis angustis curvatis apiculatis; soris rectis usque ad 2 mm longis albidis integris.

Type.—Basin of El General, Pcia. S. José, Costa Rica, 675–900 m, *Skutch 4776* (US; isotypes F, GH).

Paratypes.—HONDURAS: Depto. Sta. Barbara: San Pedro Sula, 1200 ft, *Thieme* (US). COSTA RICA: Pcia. Cartago: Río Reventazón, Turrialba, *Godfrey 66328* (GH); Valley of the Río Reventazón 3 km SE of Turrialba, 500–600 m, *Holm & Iltis 37* (US), ca. 600 m, *Mickel 3355* (UC, US), ca. 1600 ft, *Rosbach 3557* (GH); Vicinity of Pejivalle, ca. 900 m, *Standley & Valerio 46892* (GH, US). Pcia. S. José: Cerro Turubales, 600 m, *Brade & Brade 427* (UC, US); Vicinity of El General, 880 m, *Skutch 2154, 2328* (both GH, US); Along the Río Sonador near the Panamerican Hwy., 600 m, *L. O. Williams et al. 28775* (US). Pcia. Puntarenas: Boruca, *Pittier 4823* (US), Las Cruces Tropical Botanical Garden 6 km S of S. Vito de Java, 4000 ft, *McAlpin [Las Cruces 74-445, 74-447]* (both US); Osa Peninsula ca. 20 km S of Rincon de Osa, ca. 150 m, ca. 150 m, *Mickel 23814* (US); Bahía Yglesias, Cocos Island, 10 m, *Gómez 6555* (US). PANAMA: Pcia. Panama: Río Piedras ca. 25 km NE of Cerro Azul, 550 m, *Mori & Kallunki 3468* (US). Pcia. Darién: Cana, *R. S. Williams 902* (US). VENEZUELA: Edo. Monagas: Montaña de Aguacate between Caripe and Caripito, 600–900 m, *Steyermark 62209* (US). Edo. Yaracuy: Fila La Enjalma S of Chivacoa, 500 m *Vareschi & Pannier 2629* (US). PERU: Depto. Huánuco: Near the confluence of the Río



Fig. 1. Holotype of *Asplenium cuspidatum* var. *tritriculum* Lelling, Skutch 4776 (US). Fig. 2. Holotype of *Asplenium excelsum* Lelling, Maxon 5205 (US).

Cayumba with the Río Huallaga, 860 m, *Mexia* 8290 (US). Depto. S. Martín: Near Tarapoto, *Spruce* 4035 (US).

Discussion.—This is an entirely lowland variety that can be confused with small (pinnate-pinnatifid or 2-pinnate) forms of var. *tripinnatum* (Fourn.) Morton & Lellinger.

Asplenium excelsum Lellinger, sp. nov.

Fig. 2

Plantae terrestres. Rhizoma erectum (0.5)1–1.5 cm diam. paleaceum; paleis lanceolatis ca. 10 mm longis 2 mm latis brunneis clathratis marginibus subrepandis. Stipites 12–30(40) cm longi ca. 3 mm lati profunde canaliculati exalati virides vel brunneoli, ad basin paleacei, paleis eis rhizomatis similibus. Rachides virides vel brunneolae canaliculatae uniformiter anguste alatae glabrae vel sparse squamatae, paleis linearibus ca. 1 mm longis 2 cellulis latis clathratis curvatis. Laminae ovatooblongae (32)35–65(70) cm longae (10)15–30(42) cm latae papyraceae, ad basin obtusae vel truncatae, ad apicem obtusae et abrupte acuminatae in modo *Struthiopteridis*, subtripinnatifidae vel tripinnato-pinnatifidae; pinnis manifeste petiolatis alternatis vel suboppositis subaequilateralibus, ad basin inferiorem leviter excavatis, ad apicem acuminatis, costulis alatis; pinnulis oblongo-ovatis; segmentis et venulis simplicibus vel ad apicem furcatis; soris brevibus rectis usque ad 3(4) mm longis albidis integris.

Type.—Slopes of Cerro de Lina, above El Boquete, Pcia. Chiriquí, Panama, 1300–1560 m, *Maxon* 5205 (US; isotypes GH, NY, US).

Paratypes.—NICARAGUA: Depto. Jinotega: Region of Las Mercedes, sierra E of Jinotega, 1200–1500 m, *Standley* 10725 (F, US). Depto. Managua: Sierra de Managua, 600–900 m, *Bro. Antonio Garnier* A744 (US). COSTA RICA: Pcia. Alajuela: Zarcero, *A. Smith* P.C.311 (F), 4500 ft, *A. Smith* F71 (F), 1550 m, *A. Smith* 48/140 (US), 1575 m, *A. Smith* 48/128 (US), 2000 m, *A. Smith* H.479 (US); San Antonio de Zarcero, 1475 m, *A. Smith* 48/310 (US). Pcia. Heredia: Vara Blanca de Sarapiquí, 1310 m, *Skutch* 3634 (NY, US). Pcia. S. José: La Palma, April 1910, *Wercklé* (US); Rancho Redondo, slopes of Volcán Irazú, ca. 6000 ft, *Scamman* 7744 (GH, US); Cerro de Piedra Blanca above Escazú, *Standley* 32519 (US); Tablazo, 1700 m, *Brade & Brade* [*Ros. Fil. Costar. Exs.* 43] (GH, NY); S. Pablo de Tarrazú, *O. Jiménez* 1100 (US); El Copey, 1800 m, *Tonduz* 11704 (US), 7500 ft, *Stork* 1544 (US), ca. 2100 m, *Lellinger* 1788 (US); 5 mi S of Sta. María de Dota, 6600 ft, *Stork* 1779 (NY, US), 6800 ft, *Stork* 1756 (US); Vicinity of Sta. María de Dota, 1500–1800 m, *Standley* 41762 (US); Vicinity of El General, 1525 m, *Skutch* 4185 (GH, MO, NY, US); 16.5 mi S of Villa Mills on Interamerican Highway, 4700 ft, *McAlpin* 271 (DUKE); 25 km S of Villa Mills on Interamerican Highway, ca. 1450 m, *Mickel* 3277 (NY, US); Pacific slopes of Chirripó Massif at Abra, 2500 m, *Davidse & Pohl* 1531 (MO). Pcia. Cartago: Cerro Carpintera, 5000 ft, *Stork* 2124 (US), 1500–1800 m, *Standley* 34269 (US), 1500–1850 m, *Standley* 35504 (GH, US), 1800 m, *Torres R.* 111 (US); Mountains above Tres Rios, 5000 ft, *Scamman & Holdridge* 80521 (GH, US); Navarro, 1500 m, *Torres R.* 85 (US); Finca Navarro, 1350 m, *Maxon* 663 (NY, US); El Muñeco, 1400–1500 m, *Standley & Torres* 51035 (US); La Estrella, *Standley* 39183 (US). PANAMA: Pcia. Chiriquí: Vicinity of El Boquete, 1000–1300 m, *Maxon* 5079

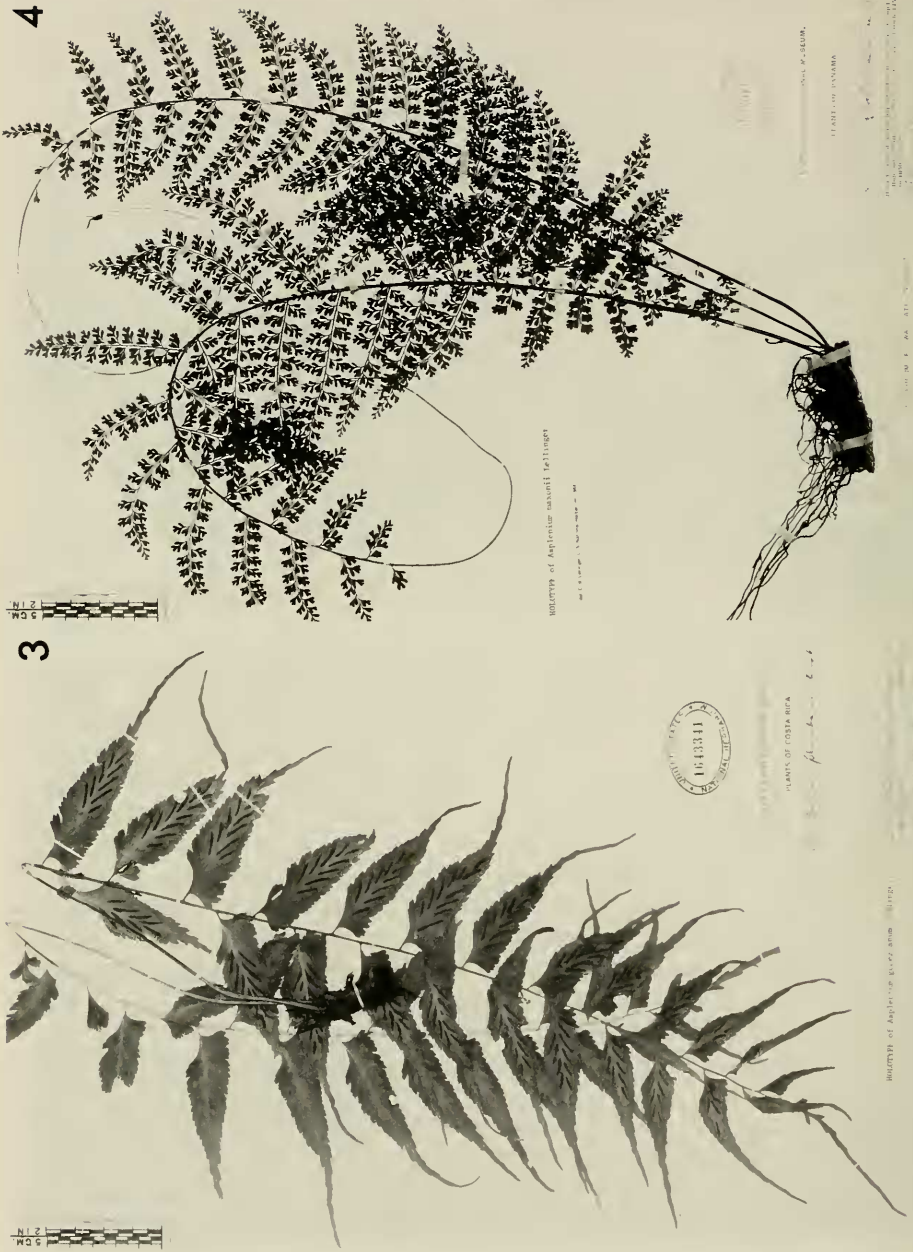


Fig. 3. Holotype of *Asplenium gomezianum* Lellinger, Skutch 3203 (US). Fig. 4. Holotype of *Asplenium maxonii* Lellinger, Maxon 5601 (US).

(US), 1000–1500 m, *Cornman 944* (US), 987 (F, US); Between Holcomb's Trail and Monniche Plantation above El Boquete, 1500–1725 m, *Killip 5082* (GH, NY, US); Vicinity of Casita Alta, Volcán de Chiriquí, ca. 1500–2000 m, *Woodson, Allen & Seibert 837* (US); Río Piedras Candela on logging road ca. 4 mi with junction of road to Las Mellisas, 1800–2000 m, *McAlpin 2208* (DUKE).

Discussion.—This species is fairly common in dense forests and along streams in ravines. Commonly it has been identified as *Asplenium solmsii* Baker, which is a much smaller plant from Guatemala. It is related to *A. commutatum* Mett. ex Kuhn and to *A. achilleifolium* (Liebm.) Mart. & Gal.

Asplenium gomezianum Lellinger, sp. nov.

Fig. 3

Plantae epiphyticae. Rhizoma erectum vel ascendens ca. 3 mm diam. ad apicem paleaceum; paleis lanceatis ca. 5 mm longis 0.75 mm latis aeneis clathratis marginibus integris. Stipites approximati 6–22 cm longi 1–2 mm lati canaliculati anguste alati virides vel brunneoli glabri. Rachides virides vel brunneolae angustissime alatae glabrae ad apicem leviter flexuosae. Laminae oblongae (10)18–42 cm longae (4.5)8–12(20) cm latae papyraceae, ad basin obtusae vel truncatae, ad apicem subobtusae abrupte acuminatae vel caudatae, pinnatae; pinnis oblongo-lanceolatis petiolatis alternatis inaequilateralibus, ad basin inferiorem excavatis ad basin superiorem truncatis non auriculatis, ad apicem acuminatis interdum acutis marginibus crenulatis; venis furcatis leviter curvatis; indusiis usque ad 13 mm longibus viridibus integris.

Type.—Vara Blanca de Sarapiquí, Pcia. Heredia, Costa Rica, 1500–1750 m, *Skutch 3203* (US; isotypes GH, NY).

Paratypes.—COSTA RICA: Pcia. Puntarenas: Monteverde, 4500 ft, *Palmer 100* (NY). Pcia. Alajuela: La Palma de S. Ramón, 1310 m, *Brenes 3956* (NY); Río La Balsa ca. 23 km NE of S. Ramón, 850 m, *Taylor 17817* (NY); S of S. Ramón ca. 3 km above S. Rafael, ca. 1200 m, *Lellinger 1346, 1347* (both CR, F, MO, US). Pcia. Heredia: Zarcero, 1500 m, *A. Smith 48/198* (US). Pcia. S. José: La Palma, 1500 m, *Valerio A94, 198* (both US). Pcia. Cartago: Cartago, 4250 ft, *Cooper 6037* (US); 5 mi S of Cartago, ca. 1800 m, *Maxon 507* (NY, US); Estrella, 4400 ft, *Cooper 6038* (US), 5200 ft, *Stork 3281* (GH, US); Navarro, 1500 m, *Torres R. 76, 79* (both US); El Muñeco, ca. 1400 m, *Standley 33502, 33631* (both US); Vicinity of Orosi, *Standley 39840* (US); 2.2 km SSE of Purisil above Finca La Concordia, ca. 1800 m, *Lellinger 1479* (US), 1499 (CR, F, US), 1518 (F, US); Ca. 6 km SE of Tapantí, *Wilbur & Stone 8901* (DUKE). PANAMA: Pcia. Chiriquí: Vicinity of El Boquete, 1000–1500 m, *Cornman 876, 1012* (both US); Slopes of la Sierra del Boquete, 4400 ft, *Bro. Maurice 828* (GH), 830 (US); Valley of the Río Piarnasta above El Boquete, 1525–1575 m, *Killip 5165* (US); Roballo Trail above El Boquete, 1600–1700 m, *Killip 5426* (US). Pcia. Veraguas: Near the Escuela Agrícola Alto Piedra near Sta. Fé, 730 m, *Croat 34071* (MO).

Discussion.—This species resembles *A. auritum* Swartz, but has broader, thinner pinnae, and *A. auriculatum* Swartz, but has pinnae lacking a basal acroscopic lobe.

Asplenium harpeodes var. *major* Hieron. *Hedwigia* 60:237. 1919

Lectotype.—To fix the application of this name, I choose: Caracas, Distr. Fed., Venezuela, *Funck & Schlim* [probably actually *Moritz*] 246 (B not seen; isolecotypes FI-Hb. Webb not seen, GH not seen, W not seen). This is a synonym of *A. harpeodes* Kunze.

Asplenium maxonii Lellinger, sp. nov.

Fig. 4

Plantae epiphyticae terrestres raro epipetricae. Rhizoma ascendens ca. (5)10 mm diam, usque ad 6(8) cm longum squamatum; paleis anguste lanceolatis usque ad 4 mm longis 0.5 mm latis subbicoloribus brunneis clathratis marginibus pallidioribus subclathratis integris. Stipites congesti 1–6 cm longi exalati. Stipites rachidesque canaliculati atropurpurei vel brunnei glabri. Rachides uniformiter anguste alati, alis viridibus, prolongati ad apicem bulbiferi. Laminae rhombicae (9)25–45 cm longae (2.5)4–13 cm latae papyraceae, ad basin acuminatae raro obtusae, ad apicem obtusae vel subobtusae (rachidi prolongati excepto), tripinnatae; pinnis sessilibus lanceatis alternatis aequilateralibus; pinnulis oblongis inaequilateralibus segmentis obovatis vel elongatis saepe bilobatis ad apicem rotundatis non apiculatis; indusiis ca. 2 mm longis subviridibus integris.

Type.—Upper Caldera River, near “Camp I,” Holcomb’s trail above El Boquete, Pcia. Chiriquí, Panama, 1450–1650 m, *Maxon 5601* (US; isotypes GH, NY, US).

Paratypes.—COSTA RICA: Pcia. Puntarenas: Vicinity of the biological field station at Wilson finca, 1100–1400 m, *Mickel 2013* (NY), 1100–1200 m, *Mickel 3051a* (NY), *3051b* (NY, US); Finca las Cruces, 4000 ft, *Gillis 10154* (A); Las Cruces, ridge road, *Dressler 3589* (US); 3–5 km NW of the biological field station at Finca Wilson, 1300–1400 m, *Lellinger 813* (US); Ca. 5 km NE of Finca las Cruces, ca. 1400 m, *Burch 4514* (NY). Pcia. Alajuela: Upper drainage of the Río Peñas Blancas below the Monteverde Cloud Forest Nature Reserve, 1250–1350 m, *Burger, Visconti & Gentry 10728* (NY); 11 km N of S. Ramón, 1000 m, *Lellinger 747* (US), *Mickel 2942* (NY, US); Viento Fresco, 1600–1900 m, *Standley & Torres 47865* (US); San Antonio de Zarcero, 1500 m, *A. Smith 48/286* (US). Pcia. Limón: Suerre, Llanuras de Sta. Clara, 300 m, *Donnell-Smith 6890* (GH, NY, US); La Concepción, Llanuras de Sta. Clara, 250 m, *Donnell-Smith 6932* (NY). Pcia. Heredia: Vara Blanca, 1600–1700 m, *Maxon 8316, 8341* (both US), 1500–1750 m, *Skutch 3133* (GH, US); Yerba Buena NE of S. Isidro, ca. 2000 m, *Standley & Valerio 49668* (US); Cerro de las Caricias N of S. Isidro, 2000–2400 m, *Standley & Valerio 52056* (US). Pcia. S. José: La Palma, 1400 m, *Brade & Brade [Ros. Fil. Costar. Exs. 27]* (NY, US), ca. 1600 m, *Standley 33110, 33124* (both US); vicinity of La Palma, 1450–1550 m, *Maxon 368, 387* (both NY, US); Las Nubes, ca. 5000 ft, *Scamman & Holdridge 8046* (GH, US); Quebrada Bajo Máquina, 3 km NE of Cascajal, 1640 m, *Lent 2495* (GH); SW of Santiago de Puriscal, between Cerbatana and Mercedes Sur, ca. 1100 m, *Lellinger 1574* (US); Quebrada de los Yases, between La Guaría and Palmilera, 1700 m, *Jiménez M. 1459* (CR, F, NY, US); Vicinity of Sta. María de Dota, 1500–1800 m, *Standley & Valerio 43318* (GH); El Copey, *O. Jiménez 1103* (US); Lower SE slopes of Cerro Chirripó, 5500–7000 ft, *Evans & Lellinger 11* (US). Pcia. Cartago: Vicinity

of Cartago, 1500 m, 19 April 1906, *Maxon* (NY); Finca Navarro, 1350 m, *Maxon* 627 (NY); El Muñeco, 5000 ft, *Stork* 2661 (US); Vicinity of Orosi, *Standley* 39754 (US); Ca. 2.2 km SSE of Purisil, above Finca La Concordia, ca. 1800–2300 m, *Lellinger* 1550 (US); Ridge above Platanillo, 1200–1450 m, *Mickel* 3411 (NY, US); Platanillo, 650–900 m, *de la Sota* 5247 (US); New road from Tapantí ca. 7 km S of bridge, 1500 m, *Hauke* 416 (NY); E slope above the Río Grande de Orosi ca. 10 km S of Tapantí, 1400–1600 m, *Burger & Stolze* 5696 (F, GH, US), ca. 15 km S of Tapantí, 1500 m, *Burger & Liesner* 6751 (F, GH); Road above the Río Grande de Orosi, 12–16 km S of Tapantí, 1500–1600 m, *Stolze* 1482 (F, GH, NY, US); Flood plain of the Río Reventazón 3 km SE of Turrialba, 500–600 m, *Holm & Iltis* 56 (US). PANAMA: Pcia. Chiriquí: Ca. 5 km NE of Boquete, 1700–1800 m, *Skog* 4048 (US); Cerro Horqueta, 6500 ft, *von Hagen & von Hagen* 2109 (NY); Valley of the Río Caldera from El Boquete to the Cordillera, 1400–1600 m, *Killip* 5062 (GH), 1650 m, 5238 (GH, US); Vicinity of El Boquete, 1000–1500 m, *Cornman* 1010, 1187 (both US). Pcia. Coclé: 5 mi N of El Valle, *Armond* 375 (DUKE); El Valle de Antón, *Vergara* 8 (PMA, US). COLOMBIA: Depto. Chocó: Río Nuquí, ca. 300 m, *Haught* 5497 (US); Río Mutatá ca. 3 km above its junction with the Río El Valle, NW of Alto del Buey, ca. 800 m, *Lellinger & de la Sota* 145 (LP, US); NW side of Alto del Buey, ca. 1300 m, *Lellinger & de la Sota* 329 (COL, HUA, LP, US). ECUADOR: Pcia. Napo: Talag, 15 km SSW of Tena, 2000 ft, *Grubb et al.* 126 (US); Between Tena and Archidona, *Asplund* 9274 (US). PERU: Depto. Huánuco, 1600 m, *Woytkowski* 34518 (US). BOLIVIA: Depto. La Paz: Polo-Polo, 1100 m, *Buchtien* 3479 (US).

Discussion.—This species is similar to *A. rutaceum* (Willd.) Mett., from which it differs in pinnule outline and in having round, rather than apiculate, segment apices (a character especially useful in distinguishing juvenile plants of the two species). This species was formerly called *A. conquisitum* Underw. & Maxon ex Christ, but that name has proved to be a synonym of *A. rutaceum*.

Blechnum occidentale f. *pubirhachis* (Rosenst.) Lellinger, comb. nov.

Blechnum occidentale var. *pubirhachis* Rosenst. *Hedwigia* 46:94. 1906. *Type.*—Passo Mansa, Munic. Blumenau, Est. S. Paulo, Brazil, *Haerchen* 18 (S not seen; isotype NY not seen).

Discussion.—This form appears throughout the range of the species, although it tends to occur at higher elevations than does f. *occidentale*, and often has smaller, more congested fronds.

Ctenitis bidecorata Lellinger, sp. nov.

Fig. 5

Plantae terrestres. Rhizoma erectum 5 mm diam. (basibus stipitum exclusis) paleaceum; paleis linearibus usque ad 10 mm longis 1 mm latis concoloribus aeneis pilosulis integris. Stipites approximati 7–20 cm longi squamati. Stipites rachides costaeque paleaceae dense aut sparse pilosae, paleis anguste lanceolatis 1.5–8 mm longis 0.1–0.5 mm latis concoloribus aeneis aut brunneis epilosulis integris, pilis usque ad 1 mm longis multicellularibus hyalinis. Laminae lanceolatae (12)15–37 cm longae (4)6–18(20) cm latae papyraceae, ad basin obtusae

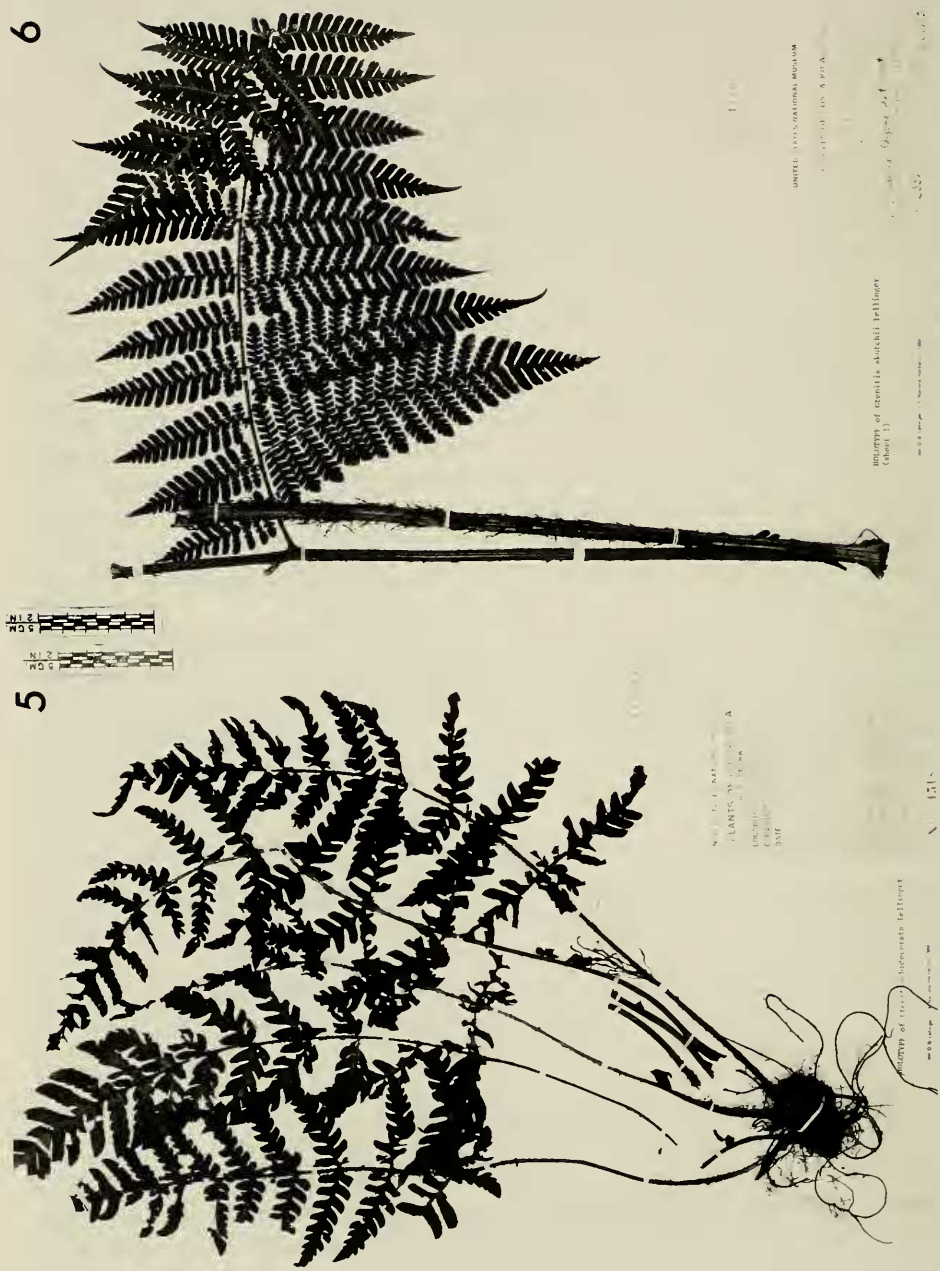


Fig. 5. Holotype of *Ctenitis bidecorata* Lellinger, Stork 1518 (US). Fig. 6. Basal pinna of holotype of *Ctenitis skutchii* Lellinger, Skutch 2337 (US).

bipinnato-pinnatifidae, ad apicem acuminatae pinnatifidae, pro parte maxima pinnato-pinnatifidae; pinnis sessilibus lanceatis inaequilateralibus (pinnis basilibus triangularibus basiscopice productis); segmentis oblongis obtusis, venis usque ad 6-jugis; soris rotundis ca. 1 mm diam. submedialibus exindusiatis.

Type.—Estrella—Sta. Maria road, Pcia. San José, Costa Rica, 7000 ft, *Stork 1518* (US).

Paratypes.—COSTA RICA: Pcia. Heredia: Aromal del Volcán Barba, 2800 m, *Valerio 28* (CR, US); Porrosatí, 1900 m, *Gómez 3553, 3564* (both CR). Pcia. S. José: Zurquí, 1900 m, *Gómez 3525* (CR); between Estrella and Sta. María, 7000 ft, *Stork 1523* (UC). Pcia. Cartago: Road above the Río Grande de Orosi, 12–16 km S of Tapantí, 1500–1600 m, *Stolze 1495* (F, US).

Discussion.—Christensen (in herb. US) considered this species to be a variety of what is now called *Ctenitis macrotheca* (Fée) Ching, a member of *Ctenitis* subg. *Subincisae*. However, the relationship does not seem close to me.

Ctenitis skutchii Lellinger, sp. nov.

Fig. 6

Plantae terrestres. Rhizoma erectum ca. 1 cm diam. (basibus stipitum exclusis) paleaceum; paleis linearibus usque ad 15 mm longis 1 mm latis concoloribus aeneis denticulatis raro integris. Stipites approximati 15–55 cm longi paleacei et sparse pilosuli, paleis eis rhizomatis similibus, pilis appressis usque ad 0.5 mm longis hyalinis. Rachides costaeque paleaceae et dense pilosulae, paleis lanceolatis 1–3 mm longis 0.1–0.75 mm latis concoloribus subclathratis brunneis integris, pilis eis stipitum similibus. Laminae oblongae (30)50–100(150?) cm longae (25)30–60(80) cm latae papyraceae, ad basin obtusae manifeste tripinnato-pinnatifidae, ad apicem acuminatae pinnato-pinnatifidae, pro parte maxima tripinnatae vel obscure tripinnato-pinnatifidae; pinnis pinnulisque sessilibus oblongis aequilateralibus (pinnis basilibus triangularibus basiscopice productis); segmentis oblongis obtusis vel truncatis sparse pilosulis marginibus pilosulis, pilis curvatis; venis ca. 4-jugis; soris rotundis medialibus exindusiatis.

Type.—Vicinity of El General, Pcia. S. José, Costa Rica, 1190 m, *Skutch 2337* (US).

Paratypes.—COSTA RICA: Pcia. Puntarenas: Atlantic-facing ridge beyond the Monteverde Forest Reserve near road across the ridge, ca. 1600 m, *Lellinger 1748* (US); Cañas Gordas, 1100 m, *Pittier 10993* (US); Vicinity of the biological field station at Finca Wilson, 1100–1200 m, *Lellinger 814* (US). Pcia. Alajuela: Upper drainage of the Río Peñas Blancas below the Monteverde Cloud Forest Nature Reserve, 1250–1350 m, *Burger, Visconti & Gentry 10774* (CR, F). Pcia. S. José: 8–12 km SE of Desemparados on Calle Tablazo, 1800–1900 m, *Utley & Utley 3046* (F). PANAMA: Pcia. Chiriquí: Río Quebrada, 1650 m, *Killip 5502* (US, misnumbered 5136 at GH); Ca. 5 km NW of the town of Cerro Punta, 2000–2300 m, *Wilbur et al. 15230* (DUKE).

Discussion.—This species belongs to *Ctenitis* sect. *Subincisae* and has commonly been called *C. subincisa* (Willd.) Ching, but differs from that species in having pilosulous axes bearing usually flat, slightly toothed scales. It is closer to *C. adenopteris* (C. Chr.) Ching than to *C. subincisa*.

Cyathea pseudonanna (Gómez) Lellinger, comb. nov.

Trichopteris pseudonanna Gómez, *Phytologia* 50:69. 1981. *Type*.—Cerro Tuti, Edo. Veraguas, Panama, *Folson & Edwards* 3370 (MO).

Discussion.—A second gathering of this species from the type locality (*Knapp & Sytsma* 2581, MO, US) has minute, hemitelioid indusia. The specimen has alate rachises reminiscent of *C. parva* (Maxon) Tryon, but probably is most closely related to *C. decorata* (Maxon) Tryon, both members of the *C. speciosa* group as defined by R. M. Tryon (*Contr. Gray Herb.* 206:46–47. 1976).

Diplazium ferulaceum (Moore ex Hook.) Lellinger, comb. nov.

Asplenium ferulaceum Moore ex Hook. *Sp. Fil.* 3:216. 1860. *Syntypes*.—Columbia, *Hartweg* 1519 (K not seen); and Quito, Pcia. Pichincha, Ecuador, *Jameson* (K not seen).

Gymnogramme sciatrophis Donn.-Sm. *Bot. Gaz.* 19:266, t. 26. 1894, as “*sciatriaphis*.” *Type*.—Río Jiménez, Llanuras de Sta. Clara, Pcia. Limón, Costa Rica, *J. D. Smith* 5084 (US; isotype NY).

Discussion.—This species apparently is the endpoint in lamina reduction leading from *D. ordinatum* (Christ) Lellinger and *D. solutum* (Christ) Lellinger through *D. myriomerum* (Christ) Lellinger. See *D. solutum* for a further comment.

Diplazium multigemmatum Lellinger, sp. nov.

Fig. 7

Plantae terrestres. Rhizoma erectum(?) paleaceum(?). Stipites ca. 70 cm longi sparse paleacei, paleis ca. 6–15 mm longis 1.25–3 mm latis concoloribus atrobrunneis sparse denticulatis, ad basin atrati, distaliter viriduli. Rachides glabriusculae viridulae. Laminae oblongae ca. 75 cm longae 25–40 cm latae papyraceae, ad basin obtusae vel truncatae bipinnatae, ad apicem anguste acutae pinnatopinnatifidae; pinnis petiolulatis (usque ad 1.5 cm) lanceatis (paribus infimis lanceolatis) usque ad 27 cm longis 7 cm latis aequilateralibus subfalcatis pinnatifidis raro ad basin pinnatis, ad apicem acutis aut acuminatis; segmentis oblongis subobtusis aut rotundis marginibus crenatis; venis 5–8(10)-jugis bifurcatis; indusiis 2–5 mm longis marginibus sparse aut dense ciliatis; gemmulis minutis nigris saepe in ramis acroscopicis venis basalibus acroscopicis.

Type.—North slopes of Cerro Chompipe ca. 10 km NNE of Heredia, Pcia. Heredia, Costa Rica, 2200 m, *Lellinger* 1006 (US).

Paratypes.—COSTA RICA: Along Interamerican Highway, *Scamman* 7143 (GH). Pcia. Alajuela: La Palma de S. Ramón, *Brenes* 10560 (NY). Pcia. Heredia: Porrosatí, 1900 m, *Gómez* 3561 (CR).

Diplazium myriomerum (Christ) Lellinger, comb. nov.

Athyrium myriomerum Christ, *Bull. Herb. Boiss.* II, 6:169. 1906. *Syntypes*.—Navarro, Pcia. Cartago, Costa Rica, *Wercklé* in 1905 (P not seen; presumable isosyntype US); and Costa Rica, *Wercklé* 100 p. p. in 1903 (P not seen).

Diplazium bradeorum Rosenst. *Repert. Sp. Nov. Fedde* 9:69. 1910. *Type*.—Carrillo, Pcia. S. José, Costa Rica, 400 m, *Brade & Brade* 383 (S not seen photo 6265; isotypes P not seen photo 4077, US).

Discussion.—See *D. solutum* (Christ) Lellinger.

Diplazium navarrense Lellinger, sp. nov.

Fig. 8

Plantae terrestres. Rhizoma erectum dendroideum usque ad 25 cm longum 1 cm latum, ad apicem sparse paleaceum, paleis lanceatis ca. 4 mm longis 1 mm latis concoloribus brunneis integris. Stipites congesti 30–40 cm longi. Stipites rachidesque glabri viriduli sulcati exalati. Laminae oblongo-lanceatae 35–45 cm longae 20–30 cm latae papyraceae, ad basin truncatae, ad apicem acuminatae pinnatae, distaliter bipinnatae proximaliter pinnato-pinnatifidae; pinnis sessilibus alternatis oblongis usque ad 15 cm longis 3 cm latis aequilateralibus aut subaequilateralibus, ad basin basiscopicis interdum excavatis, pinnatis pinnatisectis vel pinnatifidis, ad apicem lobatis caudatis; pinnulis segmentisque ovatis vel oblongis, venis usque ad 6-jugis usque ad 3(4)-furcatis; soris usque ad 4 mm longis curvatis saepe singularibus; indusiis brunneis subscariosis integris.

Type.—Ravine of the Río Naranjo, Finca Navarro, Pcia. Cartago, Costa Rica, 1350 m, *Maxon 658* (US; isotype NY).

Paratype.—Same as the type, *Maxon 662* (NY, US).

Diplazium ordinatum (Christ) Lellinger, comb. nov.

Athyrium ordinatum Christ, Bull. Herb. Boiss. II, 4:967. 1904. *Type.*—Costa Rica, *Wercklé* (P not seen).

Athyrium reductum Christ, Bull. Herb. Boiss. II, 4:966. 1904. *Lectotype.*—Alajelita, Pcia. S. José, Costa Rica, 1300 m, *Alfaro 16472* (US; isolectotypes NY, P not seen), chosen by Lellinger (Proc. Biol. Soc. Washington 89:708. 1977).

Athyrium costaricense Christ, Bull. Herb. Boiss. II, 5:252. 1905. *Type.*—Costa Rica, *Wercklé* (P not seen).

Discussion.—See *Diplazium solutum* (Christ) Lellinger.

Diplazium skutchii Lellinger, sp. nov.

Fig. 9

Plantae terrestres. Rhizoma erectum dendroideum aetate usque ad 20 cm longum 1 cm latum (stipitibus excluso), ad apicem dense paleaceum, paleis usque ad 10 mm longis 1.5 mm latis concoloribus atrobrunneis integris. Stipites approximati 30–60 cm longi ad 5 mm lati straminei villosuli, villis contortis ca. 0.5 mm longis multicellularibus subcatenatis. Laminae oblongo-lanceolatae 50–75(100?) cm longae 25–40(50) cm latae papyraceae, ad basin obtusae bipinnato-pinnatifidae, ad apicem acuminatae pinnato-pinnatifidae aut pinnatifidae; pinnis sessilibus alternis suboppositis (infimis petiolulatis usque ad 1 cm) aequilateralibus oblongo-lanceolatis usque ad 25 cm longis 5 cm latis (infimis usque ad 30 cm longis 12 cm latis), ad basin truncatis, ad apicem anguste acutis; pinnulis vel segmentis oblongis, ad apicem rotundis, abaxialiter pilosulis, pilis hyalinis, venulis usque ad 12-jugis 2- vel 3-furcatis; soris 2–5 mm longis, plus minusve rectis saepe singularibus; indusiis brunneis ciliato-erosis.

Type.—Vicinity of El General, Pcia. S. José, Costa Rica, 1160 m, *Skutch 2959* (US; isotype NY).

Paratypes.—NICARAGUA: Depto. Matagalpa: Sta. María de Ostuma, ca. 1500



Fig. 7. Basal portion of frond of holotype of *Diplazium multigenmatum* Lellinger, Lellinger, Maxon 658 (US).
 Fig. 8. Holotype of *Diplazium navarrense* Lellinger, Lellinger, Maxon 1006 (US).

m, Gomez, Cittar & Villa 6375 (CR). COSTA RICA: Pcia. S. José: Vicinity of El General, 1190 m, *Skutch 2329* (NY, US). Pcia. Cartago: Carpintera, 1700 m, *Brade 805* (UC). PANAMA: Pcia. Chiriquí: Vicinity of Camp Aguacatal, E slope of Volcán Chiriquí, *Maxon 5288* (US); Vicinity of El Boquete, 1000–1300 m, *Maxon 4939* (US), 1000–1500 m, *Cornman 1098, 1125* (both US), *1362* (UC, US).

Diplazium solutum (Christ) Lellinger, comb. nov.

Fig. 10

Athyrium solutum Christ, Bull. Herb. Boiss. II, 4:967. 1904. *Type*.—Costa Rica, *Wercklé* in 1903 (P not seen photo 4038; isotype US).

Discussion.—This species, along with *D. ferulaceum* (Moore ex Hook.) Lellinger, *D. myriomerum* (Christ) Lellinger, and *D. ordinatum* (Christ) Lellinger, were formerly placed in *Athyrium*; Tryon and Tryon (*Ferns Allied Pls.* 544–545. 1982) pointed out their affinity with *Diplazium*. Although most have single, rather than the typical double sori found in *Diplazium*, double sori are found occasionally in *D. solutum*, and the segments of these species are not spinulose nor are the veins readily visible on the abaxial lamina surface, as is usual in most *Athyrium* species.

Dryopteris aspidioides var. *subhastata* C. Chr.

K. Danske Vidensk. Selsk. Skr. VII, 4:287. 1907

Lectotype.—To fix the application of this name, I choose: Near Tarapoto, Depto. S. Martín, Peru, *Spruce 3964* (C not seen; isolectotypes B not seen, presumably K not seen, US). The other syntypes are: Loreto, Depto. Loreto, Peru, *Ule 6518* (P not seen); S. Gaván, Depto. Puno, Peru, *Lechler 2311* (B not seen); Colombia, *Lindig 53* (B not seen); and Caracas, Distr. Fed., Venezuela, *Otto 596* (B not seen). *Dryopteris aspidioides* var. *subhastata* is a synonym of *Thelypteris aspidioides* (Willd.) Tryon.

Dryopteris tablaziensis Christ

Bull. Herb. Boiss. II, 7:262. 1907

Lectotype.—To fix the application of this name, I choose: La Palma, Pcia. S. José, Costa Rica, 1500 m, *Wercklé 17010* (P not seen), examined by A. R. Smith (in litt. 22 Mar 1977). The other syntype is: Tablazo, Pcia. S. José, Costa Rica, 1900 m, *Biolley 67* (P not seen); isosyntype US). *Dryopteris tablaziensis* is a synonym of *Thelypteris pilosula* (Mett.) Tryon.

Grammitis barbensis Lellinger, sp. nov.

Fig. 11

Plantae epiphyticae. Rhizoma ascendens minutum manifeste paleaceum; paleis lanceatis ca. 3 mm longis 0.5 mm latis cinereis clathratis marginibus pilosis, pilis simplicibus furcatis vel stellatis ca. 0.15 mm longis. Stipites 3–9 mm longi 0.4 mm lati. Stipites rachidesque teretes atropurpureae striatae glabrae. Laminae anguste oblongae (3.5)5–20 cm longae (0.7)1–2 cm latae membranaceae, ad basin acutae vel acuminatae, ad apicem acutae, pinnatisectae; segmentis oblongis vel aliquando triangularibus leviter ascendentibus 4–10 mm longis 1–3 mm latis, ad basin basiscopis decurrentibus, ad basin acroscopicis truncatis raro subgibbosis,

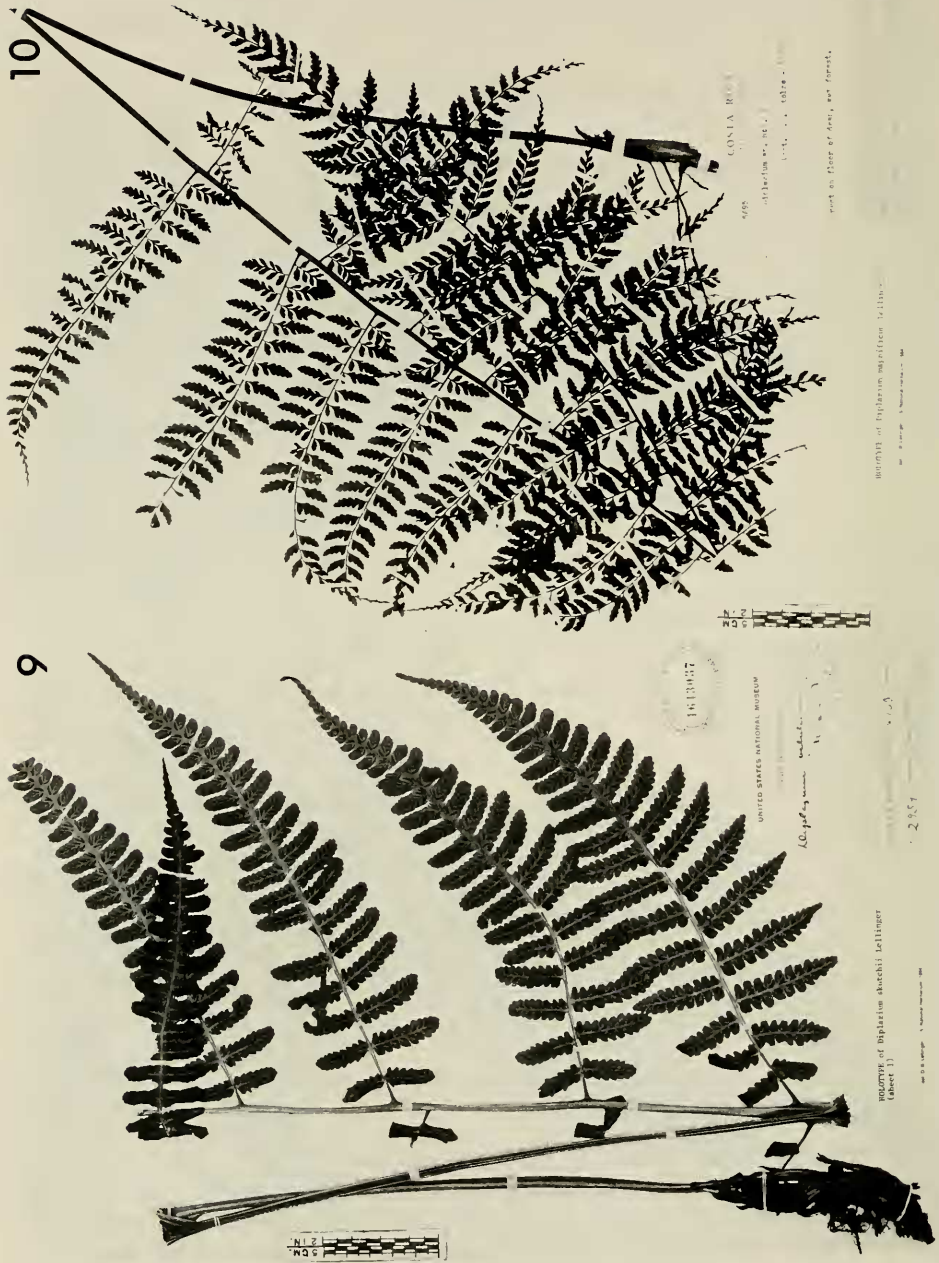


Fig. 9. Basal portion of frond of holotype of *Diplazium skutchii* Lellinger, Skutch 2959 (US). Fig. 10. Frond of *Diplazium solutum* (Christ) Lellinger, Burger & Stolze 5695 (F).

ad apicem acutis vel raro rotundis, glabris marginibus integris vel leviter repandis; soris submedialibus rotundis leviter impressis.

Type.—Volcán Barba, Pcia. Heredia, Costa Rica, 3000 m, *Valerio 209* (US; isotype CR).

Paratypes.—Osa Peninsula, Pcia. Puntarenas, Costa Rica, 50–600 m, *Mickel 1942* (NY).

Discussion.—This species is a member of subg. *Cryptosorus* and seems to be related to *G. suprasculpta* (Christ) Seymour and to *G. micula* Lellinger.

Grammitis cornuta Lellinger, sp. nov.

Fig. 12

Plantae epiphyticae. Rhizoma ascendens ca. 4 mm diam. paleaceum; paleis anguste lanceatis usque ad 10 mm longis 1 mm latis aeneis vel rufobrunneis nitidis repandis, ad apicem setaceis. Stipites approximati 7–30 cm longi usque ad 2 mm lati tereti brunnei setiferi et sparse paleacei, setis rectis usque ad 2 mm longis brunneis, paleis eis rhizomatis similibus. Stipites rachidesque glanduliferae, glandulis submoniliformibus saepe irregulariter furcatis, cellulis globosis leviter elongatis. Laminae oblongae vel lanceolatae (5)8–25 cm longae 4–9(12) cm latae subcoriaceae, ad basin truncatae vel obtusae, ad apicem acutae, profunde pinnatifidae; segmentis oblongis saepe subfalcatis 2–5(9) cm longis 5–8 mm latis, ad basin basiscopis decurrentibus vel subtruncatis, ad basin acrosopicis truncatis vel leviter surcurrentibus, ad apicem acuminatis, paginis abaxialibus glanduliferis, costis adaxialibus leviter setiferis, marginibus involutis maturitate; venulis obscuris anastomosantibus; soris leviter submedialibus rotundis 2–3 mm diam. non impressis.

Type.—Las Nubes, Pcia. S. José, Costa Rica, ca. 1500–1900 m, *Standley 38843* (US; isotype GH not seen).

Paratypes.—COSTA RICA: Pcia. Heredia: Alto del Roble, ca. 11 km NNE of Heredia, 2100 m, *Lellinger 1062* (US). Pcia. Cartago: Sta. Clara de Cartago, 1950 m, *Maxon 8201* (US). PANAMA: Pcia. Chiriquí: Between Alto de las Palmas and the top of Cerro de la Horqueta, 2100–2268 m, *Maxon 5509* (US).

Discussion.—This species is a member of subg. *Cryptosorus* and is distinct in having areolate venation, a most unusual condition in *Grammitis* and one probably resulting from the wide segments.

Grammitis micula Lellinger, sp. nov.

Fig. 13

Plantae epiphyticae. Rhizoma erectum vel ascendens paleaceum; paleis lanceatis usque ad 2 mm longis 0.25 mm latis cinereis clathratis marginibus sparse pilosis, pilis simplicibus ca. 0.2 mm longis hyalinis. Stipites 0.5–1 mm longi 0.15–0.2 mm lati exalati. Stipites rachidesque teretae atrae striatae sparse pilosuli juventute, pilis simplicibus aut furcatis hyalinis. Laminae oblongae (3)5–15(22) cm longae (0.8)1–1.5(3) cm latae membranaceae, ad basin et apicem acutae, pinnatae vel pinnato-pinnatifidae; pinnis oblongis leviter ascendentibus 4–17 mm longis 2–3.5 mm latis, ad basin basiscopis decurrentibus, ad basin acrosopicis lobatis, ad apicem acutis vel acuminatis, crenatis aut lobatis glabris; soris submedialibus rotundis leviter impressis.

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HOLOTYPE OF

U.S. GEOLOGICAL SURVEY



UNITED STATES NATIONAL MUSEUM

Grammitis barbensis
 Lelling, Valerio 209



HOLOTYPE OF *Grammitis (Corymbosus) cornuta*
 Lelling

Fig. 11. Holotype of *Grammitis barbensis* Lelling, Valerio 209 (US). Fig. 12. Holotype of *Grammitis cornuta* Lelling, Standley 38843 (US).

Type.—End of access road just above face of mine, Cerro Colorado, on the border of Pcias. Chiriquí and Bocas del Toro, Panama, 1600–1700 m, *Folsom, Small & Robbins 4744* (US; isotype MO not seen).

Paratypes.—COSTA RICA: Pcia. S. José: Vicinity of El General, 1190 m, *Skutch 2831* (US), 1000 m, *3015* (GH, NY, US).

Discussion.—This species is a member of subg. *Cryptosorus* and seems to be related to *G. suprasculpta* (Christ) Seymour and to *G. barbensis* Lellinger.

Grammitis pseudomitchellae Lellinger, sp. nov.

Fig. 14

Plantae epiphyticae. Rhizoma erectum minutum epaleaceum. Stipites obsoleti aut usque ad 7 mm longi atrii pilosi, pilis ca. 1 mm longis tenuibus laxis. Laminae oblongae, 1.5–6 cm longae 2–4 mm latae membranaceae, ad basin attenuatae, ad apicem leviter anguste rotundae, profunde crenato-lobatae, ad apicem fertilem crenatae; lobis ascendentibus rotundis sparse pilosis, pilis 1 mm longis rectis hyalinis vel brunneolis; venulis non furcatis; soris submedialibus rotundis vel leviter elongatis non impressis.

Type.—10 km N of S. Rafael de Heredia on Volcán Barba, Pcia. Heredia, Costa Rica, 1950 m, *Mickel 3033* (NY).

Paratypes.—PANAMA: Pcia. Chiriquí: Cordillera above “Camp I,” Holcomb’s Trail 10 mi above El Boquete, 1800–2000 m, *Killip 5289a* (US); Cordillera, E of the Río Caldera, 2150 m, *Killip 5331* (US).

Discussion.—This species is a member of subg. *Xiphopteris*. It closely resembles *G. mitchellae* (Baker) Stolze from Guatemala, from which it differs in having simple veins, non-setose sporangia, fewer and shorter marginal setae, and more and shorter setae on the abaxial surface of the laminae.

Grammitis rigescens (Bory ex Willd.) Lellinger, comb. nov.

Polypodium rigescens Bory ex Willd. Sp. Pl. ed. 4, 5:183. 1810. *Type*.—Bourbon [Réunion], *Bory* (B-Hb. Willd. 19668 not seen microfiche Smithsonian Institution Library; isotypes FI not seen photo 16023, P-Hb. Juss. not seen photo 2951).

Discussion.—According to Pichi Sermolli (*Webbia* 37:118–125. 1983), Morton (*Contr. U.S. Natl. Herb.* 38:57–59. 1967) mislectotyped *Polypodium flabelliformis* Poir. in Lam., and so considered it to be an earlier name for *P. rigescens* Bory ex Willd. Pichi Sermolli has lectotyped the name on plate 87 (left) of Plumier’s “Tractatus de Filicibus Americanis.” His arguments for doing so are persuasive, and so *Grammitis flabelliformis* (Poir. in Lam.) Morton is the correct name for the small Antillean species which has been passing as *G. taenifolia* (Jenm.) Proctor.

Grammitis zeledoniana Lellinger, nom. nov.

Polypodium taxifolium var. *fragillimum* Christ, Bull. Herb. Boiss. II, 4:1103. 1904, non *Grammitis fragillima* (Copel.) Morton. *Type*.—Costa Rica, *Wercklé* in 1903 (P).

Selected specimens examined.—COSTA RICA: Pcia. Alajuela: 11 km N of S. Ramón, 1000 m, *Lellinger 754* (US). Pcia. Heredia: Cerros de Zurquí, NE of S.

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PLANT OF COLOMBIA

G. mitchellae (Lellinger)

PLANT OF COLOMBIA
Holotype of *G. mitchellae* (Lellinger)
Lellinger, *Bot. Mag. Tokyo* 66: 100, 1953, pl. 100, f. 100

PLANT OF COLOMBIA
Holotype of *G. mitchellae* (Lellinger)
Lellinger, *Bot. Mag. Tokyo* 66: 100, 1953, pl. 100, f. 100

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PLANT OF COLOMBIA

G. micula (Lellinger)
Holotype of *G. micula* (Lellinger)
Lellinger, *Bot. Mag. Tokyo* 66: 100, 1953, pl. 100, f. 100

G. micula (Lellinger)
Holotype of *G. micula* (Lellinger)
Lellinger, *Bot. Mag. Tokyo* 66: 100, 1953, pl. 100, f. 100

UNITED STATES

24570252

NATIONAL HERBARIUM

HOLOTYPE OF *Grammitis micula* Lellinger

Lellinger, *Bot. Mag. Tokyo* 66: 100, 1953, pl. 100, f. 100

Fig. 13. Holotype of *Grammitis micula* Lellinger, Folsom, Small & Robbins 4744 (US). Fig. 14. Holotype of *Grammitis pseudomitchellae* Lellinger, Mickel 3033 (NY).

Isidro, 2000–2400 m, *Standley 52000* (US), *50453* (US). Pcia. S. José: La Palma area NE of S. Jerónimo above the La Hondura valley, 1500 m, *Burger & Stolze 5381* (F). Pcia. Cartago: SE of Orosi, ca. 2.2 km SSE of Purisíl, above Finca la Concordia, ca. 1800–2300 m, *Lellinger 1525* (US). PANAMA: Pcia. Chiriquí: Cerro Colorado, along mining road 31.6 km beyond the bridge over the Rio S. Felix, 1690 m, *Croat 37133* (MO); Between Alto de las Palmas and the top of Cerro de la Horqueta, 2100–2268 m, *Maxon 5449* (US), *5481* (US). Pcia. Darién: Serranía de Pirre, ca. 8 km W of Cana Gold Mine, 1430–1480 m, *Croat 37833* (MO).

Discussion.—This species has usually been confused with *G. taxifolia* (L.) Proctor, from which it differs in having glabrous, rather than sparsely setose, segment margins and in being densely setose at the base of the stipes and more sparsely setose distally, rather than in having evenly setose stipes.

Hymenophyllum mortonianum Lellinger, sp. nov.

Fig. 15

Plantae epiphyticae. Rhizoma repens, ca. 0.4 mm diam. sparse pilosum, pilis ca. 1 mm longis hyalinis vel brunneolis manifeste pluricellularibus. Stipites 3–13 mm longi, basin versus alati. Stipites rachidesque teretes atrobrunneae striatae alatae pilosae, pilis stellatis sessilibus vel subsessilibus 4–6-brachiatis, brachiis ca. 0.4 mm longis hyalinis vel rufobrunneolis. Laminae anguste rhombicae indeterminatae(?) usque ad 23 cm longae 2.5 cm latae pinnato-pinnatifidae, ad basin et apicem acuminatae, apice plusminusve elongatae, pinnis oblongis vel triangularibus usque ad 10-lobatis, lobis 1 mm latis, marginibus minute stellato-pilosus; venulis simplicibus (venulis ad basin acroscopicis furcatis exceptis); involucris rotundis 0.75 mm diam., ad basin truncatis vel obtusis, marginibus dense stellato-pilosus.

Type.—Mojarras de Tadó, 8.5 km E of Istmina, Depto. Chocó, Colombia, 150–250 m, *Lellinger & de la Sota 425* (US; isotypes COL, CR, HUA, LP).

Discussion.—This species is a member of subg. *Leptocionium*. It is known only from the type.

Hypolepis grandis Lellinger, sp. nov.

Fig. 16

Plantae terrestres. Rhizoma ascendens ca. 1 cm diam. pilosum, pilis rufobrunneis catenatis. Frondes usque and ca. 3 m longae repertis. Stipites ad basin atropurpurei, supra basin rufobrunnei, nitidi pilosi juventute non spinosi. Rachides laminaeque pilosae et pilosulae, pilis 1–3 mm longis, multicellularibus catenatis hyalinis vel brunneolis, pilosulis 0.25–1 mm longis, 1–3-cellularibus plus minusve acicularibus hyalinis. Laminae probabilititer deltatae usque ad 2 m longae 1 m latae, tripinnato-pinnatifidae papyraceae; pinnis basalibus usque ad 70 cm longis 35 cm latis basiscopice productis, pinnulis acroscopicis 20 cm longis 7 cm latis, pinnulis basiscopicis 15 cm longis, 4 cm latis; pinnis medianis oppositis lanceolatis vel oblongis usque ad 50 cm longis 30 cm latis, pinnulis ca. 20-jugis subsessilibus oblongis usque ad 15 cm longis 4 cm latis; segmentis oblongis vel lanceatis profunde pinnatifidis, lobulis 1.75–2.5 mm latis ad apicem rotundis; indusiis scariosis manifeste pilosis deciduis.

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Fig. 16. Holotype of *Hypolepis grandis* Lellinger, Lellinger & de la Sota 425 (US). Fig. 15. Holotype of *Hymenophyllum mortonianum* Lellinger, Lellinger & Brade 348 [Ros. Fil. Costar. Exs. 143] (US).

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Fig. 15. Holotype of *Hymenophyllum mortonianum* Lellinger, Lellinger & Brade 348 [Ros. Fil. Costar. Exs. 143] (US).

Type.—La Palma, Pcia. S. José, Costa Rica, 1400 m, *Brade & Brade 348* [*Ros. Fil. Costar. Exs. 143*] (US; isotypes NY, UC).

Paratypes.—COSTA RICA: Pcia. S. José: 5 mi S of Sta. María de Dota, 6800 ft., *Stork 1754* (GH, UC, US). Pcia. Cartago: El Muñeco, 4800 ft, *Stork 2732* (NY, UC, US); La Estrella, *Standley 39214* (US). PANAMA: Pcia. Chiriquí: Valley of the Río Quebrada above El Boquete, 1650 m, *Killip 5137* (US).

Discussion.—This species resembles the South American *H. stuebelii* Hieron. in indument, but has larger laminae that are tomentose on the adaxial surface.

Osmunda hirsuta L. Sp. Pl. 2:1064. 1753

Lectotype.—To fix the application of this name, I choose: plate 162 of Plumier's "Tractatus de Filicibus Americanis," which is based on a specimen collected by Plumier near the Leogane quarter, Sto. Domingo, Hispaniola. According to Jackson (*Index Linn. Herb. 111. 1912*), there was no specimen of this species in the Linnaean herbarium in the hand of Linnaeus prior to 1767. *Osmunda hirsuta* is a synonym of *Anemia hirsuta* (L.) Swartz.

Pecluma ptilodon var. *caespitosa* (Jenm.) Lellinger, comb. nov.

Polypodium pectinatum var. *caespitosum* Jenm. Bull. Bot. Dept. Jamaica, n.s., 4:125. 1897. *Type.*—Old England, St. Andrew Parish, Jamaica, 4000 ft, *Jenman* (NY? not seen).

Pityrogramma ebenea var. *aurata* (Moore) Lellinger, comb. nov.

Gymnogramma tartarea var. *aurata* Moore, Gard. Chron. 1870:493. 1870. *Type.*—Cultivated by Veitch, originally from Peru (not seen); according to Tryon (*Contr. Gray Herb. 189:66. 1962*), Peru, *Pearce 182* (K not seen photo GH not seen) is authentic or perhaps even the type.

Polypodium ambiguum Mett. ex Kuhn

Linnaea 36:134. 1869, non Desv., 1827, nom. illeg.

Lectotype.—To fix the application of this name, I choose: Near Colonia Tovar, Edo. Aragua, Venezuela, *Fendler 254* (US). The other syntype is: Colonia Tovar, Edo. Aragua, Venezuela, *Moritz* (not seen). No specimens, but only a drawing of part of one frond of the Fendler specimen, exist at B. *Polypodium ambiguum* is a synonym of *P. ursipes* Moritz ex C. Chr.

Polypodium beyerianum Rosenst. Repert. Sp. Nov. Fedde 22:17. 1925

Lectotype.—To fix the application of this name, I choose: Turrialba, Pcia. Cartago, Costa Rica, 650 m, *A. C. Brade 21* (S; isoelectotype UC). The other syntype is: Puntarenas, Pcia. Puntarenas, Costa Rica, *Beyer 44* (S not seen). *Polypodium beyerianum* is a synonym of *P. loriceum* L.

Polypodium fraxinifolium var. *articulatum* Christ

Bull. Herb. Boiss. II, 6:49. 1906

Lectotype.—To fix the application of this name, I choose: Turrialba, Pcia. Cartago, Costa Rica, 550 m, *Pittier 9061* (US; presumable isoelectotype P not seen).

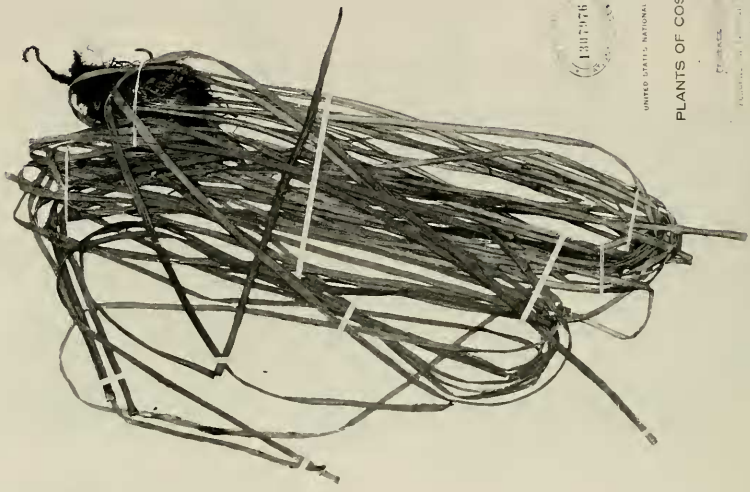
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UNITED STATES
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 Polypodium (*Genoplesium*) *subviride* Lellinger
 MICHIGAN
 No. 1171 Kennedy 1117
 1961

PLANTS OF

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 No. 1117
 Vittaria (*Genoplesium*) *costaricensis* Lellinger
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Fig. 17. Holotype of *Polypodium subviride* Lellinger, Kennedy 1117 (US). Fig. 18. Holotype of *Vittaria costaricensis* Lellinger, Standley & Valerio 44805 (US).

The other syntypes are: Carillo, Pcia. S. José, Costa Rica, *Pittier 1162* (P not seen); Tsaki, Talamanca, Pcia. Limón, Costa Rica, *Tonduz 9451* (P not seen; isosyntype US); and Costa Rica, *Wercklé* (P not seen). *Polypodium fraxinifolium* var. *articulatum* is a synonym of *P. giganteum* Desv.

Polypodium subviride Lellinger, sp. nov.

Fig. 17

Plantae epiphyticae. Rhizoma late repens 2–3.5(4) mm diam., phyllopodiiis 2–4 mm longis, irregulariter striatum atrum brunneum vel rufobrunneum paleaceum, paleis lanceolatis peltatis ca. 2 mm longis 0.5 mm latis, ad basin fuscatis clathratis, alibi hyalinis, deciduis (aliquot basibus circularibus exceptis) marginibus erosis. Stipites 2.5–8 cm distantes 2–14 cm longi 1–2 mm lati anguste alati brunneoli aut rufobrunneoli. Stipites rachides laminaeque pilosae, pilis 2 mm longis laxis multicellularibus hyalinis. Laminae oblongae vel raro anguste ellipticae (15)20–33(40) cm longae (3.5)4–5.5 cm latae papyraceae subviridae, ad basin obtusae vel truncatae, lobis abortivis infra basin, ad apicem acuminatae vel acutae, subpinnatisectae; segmentis oblongis saepe leviter falcatis, ad basin basisopicis truncatis, ad basin acroscopicis surcurrentibus, ad apicem acutis vel rotundis, marginibus integris leviter revolutis; soris 0.75–1.25 mm diam. submedialibus 1-seriebus.

Type.—La Eneida region near Cerro Jefe, Pcia. Panama, *Kennedy 1117* (US; isotype DUKE).

Paratypes.—PANAMA: Pcia. Veraguas: 6–7 km W of Sta. Fé on road past agriculture school, 2900 ft, *Nee 9727* (US). Pcia. Coclé: 6 mi N of El Valle de Antón, 582 m, *Armond 343* (DUKE); La Mesa, 850–900 m, *Luteyn 4070* (DUKE), ca. 800 m, *Skog 4112* (US); Above Penonomé, *Williams 515* (NY, US). Pcia. Colón: Road from Portobello to María Chiquita, *Armond 490* (DUKE); Along Sta. Rita Ridge lumber road, *Correa & Dressler 751* (US); Near bridge over the Río Buenaventura, near Portobello, *Foster 1705* (DUKE). Pcia. Panama: Along road from Cerro Jefe to La Eneida, 1007 m, *Armond 325* (DUKE); Cerro Jefe, *Correa & Dressler 160* (US). COLOMBIA: Depto. El Valle: Río Cajambre, S. Isidro, 5–100 m, *Cuatrecasas 17346* (US). Depto. Nariño: Cordillera de Pasto, 1000–1300 m, *Lehmann 20* (US).

Discussion.—This rather common species (especially in central Panama) is a member of subg. *Goniophlebium*. Often it has been identified as *P. dasypleuron* Kunze, a species of South America that is less pilose on the lower surface and that lacks abortive segments on the stipe. It is related to *P. loriceforme* Rosenst. in the latter character, but that species has glabrous laminae.

Vittaria costaricensis Lellinger, sp. nov.

Fig. 18

Plantae epiphyticae. Rhizoma repens ca. 1.5 cm diam. (paleis inclusis) dense paleaceum, paleis anguste lanceatis usque ad 10 mm longis 0.75 mm latis obscure rufobrunneis laxis tenuiter clathratis, ad apicem elongatum filiformibus, marginibus repandis vel distante et grosse dentatis. Stipites ca. 3 cm longi straminei canaliculati. Laminae lineares usque ad 60(75?) cm longae 4.5 mm latae subcoriaceae dilute virides, ad basin et apicem attenuatae, costis obscuris, sulcis fertilibus

ca. 1 mm ex marginibus distantis, marginibus saepe subinvolutis stramineis; paraphysibus ca. 0.2 mm longis rufobrunneis multifurcatis, furcis subclavatis; sporis bilateralibus.

Type.—El Silencio near Tilarán, Pcia. Guanacaste, Costa Rica, ca. 750 m, Standley & Valerio 44805 (US; isotype GH).

Discussion.—This species is known only from the type. It differs from *V. graminifolia* Kaulf. in having monolete spores and from *V. lineata* (L.) J. E. Smith, which has monolete spores, in having wider laminae and larger, less clathrate, and greatly toothed rhizome scales. The rhizome scales are very finely clathrate and have short cells only 2–3 times longer than wide, quite unlike most other New World *Vittaria* species.

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